SAMPLING AND ANALYSIS PLAN
NORTH PENN AREA 5 SUPERFUND SITE
OPERABLE UNIT 2
COLMAR, PENNSYLVANIA

Prepared for:

U.S. Environmental Protection Agency Region 3
1650 Arch Street
Philadelphia, PA 19103

U.S. EPA Contract Number: EP-S3-07-05
Work Assignment Number: 053ROBE03W6

June 2013

HydroGeoLogic, Inc

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1650 Arch Street
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Prepared by:

HydroGeoLogic, Inc.
801 Arch Street
Suite 504
Philadelphia, PA 19107

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LIST OF ACRONYMS AND ABBREVIATIONS

CFR	Code of Federal Regulations
CLP	Contract Laboratory Program
DMP	Data Management Plan
DOT	Department of Transportation
DPT	direct-push technology
DQO	data quality objective
EDD	electronic data deliverable
EISB	enhanced in situ bioremediation
EPA	U.S. Environmental Protection Agency
EQuIS	Environmental Quality Information System
ESAT	Environmental Services Assistance Team
F2L	Forms 2 Lite
FSP	Field Sampling Plan
FTL	field team leader
HGL	HydroGeoLogic, Inc.
HSP	Health and Safety Plan
IDW	investigation-derived waste
LCS	laboratory control sample
LCSD	laboratory control sample duplicates
MS	matrix spike
MSD	matrix spike duplicate
NPL	National Priorities List
NPWA	North Penn Water Authority
OASQA	Office of Analytical Services and Quality Assurance
OU	operable unit
PE	performance evaluation
PM	Project Manager
PPE	personal protective equipment
PDI	Pre-Design Investigation
PRG	preliminary remediation goal
PRP	potentially responsible party

QA	quality assurance
QAPP	Quality Assurance Project Plan
QC	quality control
%R	percent recovery
RAC	Remedial Action Contract
RI	Remedial Investigation
ROD	Record of Decision
RPD	relative percent difference
RSL	regional screening level
SAP	Sampling and Analysis Plan
SEDD	staged electronic data deliverable
Site	North Penn Area 5 Superfund Site
SOP	standard operating procedure
SRS	Soil Remediation Standard
TR/COC	traffic report/chain of custody form
UFP	Uniform Federal Policy
VOC	volatile organic compound
WA	Work Assignment
WAM	Work Assignment Manager

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1.0 INTRODUCTION AND OBJECTIVES

This Sampling and Analysis Plan (SAP) describes the oversight and split sample handling activities to be performed by HydroGeoLogic, Inc. (HGL) during Potentially Responsible Party (PRP) Pre-Design Investigation (PDI) field sampling activities to be conducted at the North Penn Area 5 Superfund Site (Site) located in Colmar, Pennsylvania. This project is being executed by HGL under U.S. Environmental Protection Agency (EPA) Contract Number EP-S3-07-05, Work Assignment (WA) 053ROBE03W6. Proposed PRP PDI field activities are presented in a Pre-Design Investigation Work Plan for Operable Unit (OU) 2 North Penn Area 5, prepared by Geosyntec Consultants, Inc. (Geosyntec), dated March 18, 2013. A copy of the Revised Draft PRP PDI Work Plan including the PRP PDI Quality Assurance Project Plan (QAPP) was submitted by the PRPs on May 28, 2013. Because of the size of the Draft PRP PDI Work Plan, it has not been included in this submittal. It is considered a primary reference of this document and will be available in the field for HGL personnel.

This SAP is composed of three parts; Part 1 is the Field Sampling Plan (FSP), Part 2 is the QAPP, and Part 3 is the Data Management Plan (DMP).

The overall objectives of this SAP are to:

- Describe the procedures to be used by HGL for documenting PRP PDI field sampling activities to ensure sampling methods, procedures, and activities conducted by the PRP are performed as agreed to by EPA and PRP; and
- Provide guidance for accepting split samples collected by the PRP, and submitting the splits to an EPA-approved laboratory to provide data to be used to assess the reproducibility and quality of analytical data obtained from the PRP's subcontractor laboratory.

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2.0 SITE BACKGROUND

The Site was first identified in 1979 when volatile organic compounds (VOCs) were detected in groundwater samples collected from North Penn Water Authority (NPWA) supply well NP-21. In 1986, EPA completed an assessment of contamination in the area of the Site. Based on the results of the 1986 assessment, EPA proposed the Site to the National Priorities List (NPL), and the Site was listed on January 22, 1987.

The Site background and history are presented in detail in the PRP PDI Work Plan (Geosyntec, 2013). Additionally, the site layout and location are presented in Figures 1 and 2 of the PRP PDI Work Plan.

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PART 1: FIELD SAMPLING PLAN

3.0 FIELD SAMPLING PLAN

HGL's role on WA 053-ROBE03W6 is to oversee PRP PDI field activities, accept split samples collected by the PRP, and submit these samples to an EPA-approved laboratory for analysis. This FSP, together with the QAPP (Sections 6 through 8) and the DMP (Section 9), provide guidance for performing the required tasks.

3.1 PRP PDI TASKS

The objective of the PDI activities is to delineate overburden groundwater contamination and collect soil and groundwater for the treatability study. The planned PDI field activities to be conducted by the PRP include the following:

- Reconnaissance and investigation siting;
- Subsurface utility clearance;
- Clearing/grubbing (if necessary);
- Conducting the following field activities to delineate overburden groundwater contamination:
    - Soil profiling (for lithology) and sampling during emplacement of temporary monitoring wells;
    - Installation of temporary monitoring wells, with subsequent groundwater quality monitoring and sampling;
    - Groundwater sample collection using direct-push technology (DPT);
    - Groundwater sample collection from existing permanent monitoring wells; and
    - Abandonment of DPT locations and temporary monitoring wells.
- Collecting soil and groundwater samples to support the enhanced in situ bioremediation (EISB) treatability study;
- Characterizing and disposing of PDI investigation-derived waste (IDW); and
- Surveying the locations of overburden groundwater sampling locations and the existing OU2 monitoring well network.

3.2 TASK OVERSIGHT REQUIREMENTS

HGL's field personnel will be on site during the performance of the PRP PDI field activities. For each sampling event, oversight will consist of observing PRP field activities and documenting any discrepancies from the EPA-approved PRP project plans that could potentially impact laboratory analytical results and data interpretation. HGL will record observations in the logbook and through photographic documentation.

3.3 PRP SPLIT-SAMPLE ACCEPTANCE AND SHIPMENT

In addition to oversight activities, HGL will accept soil and groundwater split samples and associated quality assurance/quality control (QA/QC) samples collected by the PRP. The split samples will be submitted to an EPA-approved laboratory for the same analyses to be performed on the parent samples. Samples will be analyzed for VOCs using method SW-846 8260B. Although the PRP will also be submitting samples for analysis for groundwater chemistry parameters to support the EISB treatability study and inform decisions about remedial alternatives, these data do not relate directly to characterizing the nature and extent of groundwater contamination; therefore, split sample analysis will be performed only for the VOC dataset.

The sample summary is presented in Table 3.1.

Table 3.1
Sample Summary

PDI Investigation Samples	Parameters of Interest	Analytical Method	Estimated Number of Samples	Sampling Frequency
Groundwater Samples	VOCs	SW846 8260B	16 split samples, 2 duplicates and QA/QC blank samples as indicated	One event
Soil Samples	VOCs	SW846 8260B	Four split samples, a duplicate, and QA/QC blank samples	One event
Equipment Blank	VOCs	SW846 8260B	One sample collected each day of sampling to include groundwater sampling equipment and soil sampling equipment	One event
Trip Blanks	VOCs	SW846 8260B	One per cooler	One event

4.0 FIELD ACTIVITY METHODS AND PROCEDURES

This section describes the field activities that will be performed by HGL personnel:

- Site mobilization;
- Field oversight and documentation; and
- Acceptance and shipment of split samples.

This SAP addresses the field activities associated with oversight of the planned PRP PDI Work Plan. At the request of the EPA, split sampling will be performed to analyze soil and groundwater samples collected by the PRP.

Site work conducted by HGL will be completed in accordance with the protocols detailed in the HGL standard operating procedures (SOPs) and in accordance with the *Generic QAPP for Region 3 RAC2 Work Assignments* provided as an appendix to the *Contract Quality Management Plan* (HGL, 2012).

4.1 MOBILIZATION

HGL will identify and provide all necessary personnel, equipment, and materials for mobilization and demobilization to and from the site for the purpose of overseeing PRP activities. All mobilization activities will be conducted in accordance with HGL SOP No. 1, *General Field Operations*.

HGL has identified the equipment and supplies necessary to support oversight activities. These items are summarized in Table 4.1.

Table 4.1
Field Equipment and Supplies

General Field Operations	
Logbook	Indelible ink pens
Digital Camera	Paper towels
Measuring Tape	Daily Activity Form/Photographic Log
Trash bags	
Sample Handling Supplies	
Laptop with Forms 2 Lite	Bubble wrap
Label and Tags	Shipping tape
Ziplock bags	Coolers
Ice	
Health and Safety Supplies	
Nitrile gloves	First aid kit
Eye wash station	Fire extinguisher
Hearing protection	Safety glasses
Heavy duty gloves	Bug spray (if allowed)
Steel toed boots	Drinking water
Sun screen	

4.2 FIELD OVERSIGHT AND DOCUMENTATION

HGL will conduct oversight of PRP site investigations to be performed at the Site as directed by EPA. Oversight activities will include the following:

- Observe PRP field sampling activities and document discrepancies, if any, with regard to the EPA-approved PDI Work Plan;
- Document PRP field investigation activity practices (e.g., equipment decontamination, sample handling, air monitoring, etc.) and indicate potential issues, if any, that may affect sampling results;
- Accept samples from PRP when necessary;
- Generate a photographic record of the PRP's field activities.

All oversight notes, observations, and measurements will be written in a project-specific logbook. Field book documentation activities will be conducted in accordance with HGL SOP No. 6, *Use and Maintenance of Field Logbooks*.

4.3 PERFORMANCE EVALUATION SAMPLE

Performance evaluation (PE) samples will used to evaluate interlaboratory differences in analytical results. HGL will obtain PE samples prepared by the EPA Region 3 Laboratory or the selected Contract Laboratory Program (CLP) Laboratory. HGL will prepare a blind label for the sample and ship the sample with the Site samples. Additionally, HGL will provide a PE sample to the PRP to submit to their laboratory as a blind sample.

4.4 PRP SPLIT SAMPLE ACCEPTANCE, HANDLING AND SHIPMENT

During the PDI field sampling event, the PRP will collect and provide HGL with split samples. In addition, any QA/QC samples associated with these samples will also be provided to HGL by the PRP. QA/QC samples will be accepted from the PRPs based on the following rates:

- Trip Blanks, one per cooler of VOC samples per shipment; and
- Equipment Blanks, one per day per decontaminated equipment (when split samples are collected).

Split sample locations are shown on Figure 4.1. HGL will direct the PRP as to which locations require a split sample for soil and/or groundwater.

The PRP will relinquish the split and QA/QC samples to HGL in sealed, properly labeled, and certified cleaned bottleware. In addition, any sample preservative will be administered to the sample by the PRP before acceptance by HGL. HGL will then pack and ship the accepted samples to an EPA-approved laboratory, in accordance with EPA sample handling protocols. The following HGL SOPs will be followed for the sample handling activities: SOP No. 3,

Chain of Custody; No. 4, *Sample Identification, Labeling, and Packaging*; and No. 5, *Sample Location Documentation*.

The split samples and associated QA/QC samples will be analyzed for the same list of analytes and using the same methods as the PRP samples. The analyte list with screening values and quantitation limits are provided in the QAPP for the PDI (Geosyntec, 2013) (attached in Appendix A).

4.5 INVESTIGATION-DERIVED WASTE MANAGEMENT

Used personal protective equipment (PPE) is the only IDW anticipated to be generated by HGL under this WA. The used PPE will be bagged in trash bags and disposed of as municipal waste. All other IDW generated during the groundwater sampling events will be handled by the PRP.

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FIGURE

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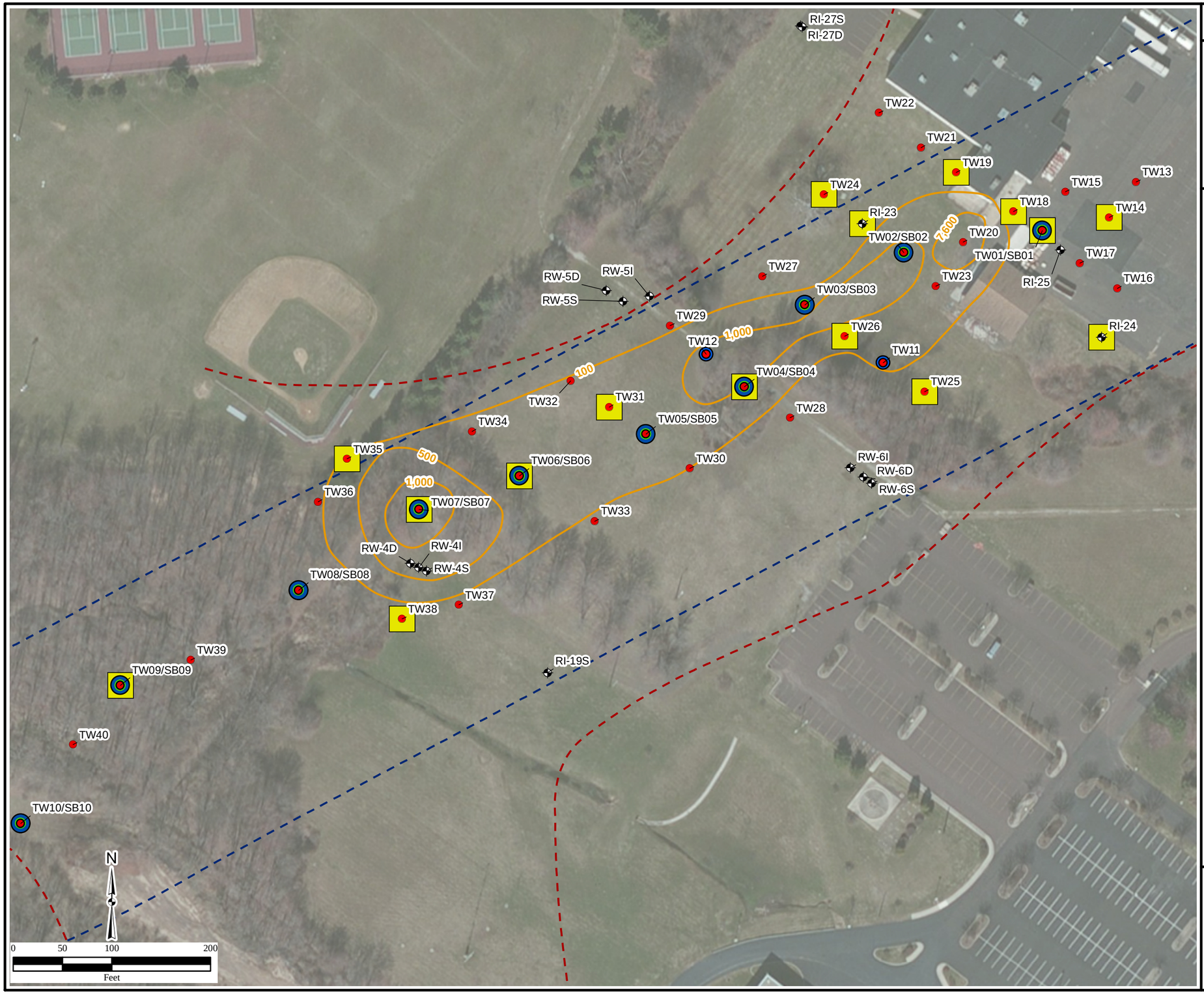
HGL—SAP, FS, North Penn 5 Site OU2
Colmar, Montgomery County, PA

Figure 4.1
Sample Locations



Legend

- Split Sample Location
- Proposed Overburden Groundwater Sampling Location
- Proposed Overburden Groundwater Sampling and Temporary Well Location
- Proposed Overburden Groundwater Sampling, Temporary Well and Soil Boring Location
- 100 — TCE Contour (µg/L, USEPA 2003)
- Limits of Elevated Bedrock
- Limits of Bedrock Trough (increased overburden thickness)

Notes:
TCE=trichloroethene
USEPA=United States Environmental Protection Agency
µg/L=micrograms per liter
Only the groundwater sample will be split at the TW06/SB06 location

\\Gst-srv-01\HGLGIS\North_Penn\OU2\SAP\(1)Sample_Locations.mxd
6/5/2013 PD
Source: HGL, USEPA, Geosyntec ArcGIS Online Imagery

HGL HydroGeoLogic, Inc

PART 2: QUALITY ASSURANCE PROJECT PLAN

The QAPP details the QA/QC measures that will be used to ensure that the data collected are of acceptable quality and sufficient quantity to support decision-making.

This QAPP is organized in accordance with EPA *Requirements for Quality Assurance Project Plans*, EPA QA/R-5, Interim Final, March 2001 (EPA, 2001). Section 5.0 presents project-specific project management information and data quality objectives (DQOs), Section 6.0 details measurement and data acquisition strategies, Section 7.0 details project-specific data assessment requirements and oversight, and Section 8.0 describes data validation and usability objectives.

5.0 PROJECT MANAGEMENT

This section discusses the project organization, overall project objectives, uses of the data and DQOs.

5.1 PROJECT ORGANIZATION

Project QA Organization and Responsibilities will be in accordance with the *Generic Site-Specific QAPP, EPA Region 3 Remedial Action Contract (RAC) 2 Contract* provided as an appendix to the contract Quality Management Plan (HGL, 2012). Uniform Federal Policy (UFP) Worksheet #7 identifies the personnel responsibilities specific to this WA. UFP Worksheet #6 describes project-specific communication pathways.

5.2 BACKGROUND AND PURPOSE

Site background information for the site is provided in Section 2.0. The purpose and objectives of this WA are identified in Section 1.0. The purpose of this QAPP is to provide guidance to ensure that all data collection procedures and measurements are scientifically sound, are of known, acceptable, and documented quality, and are conducted in accordance with the requirements of the project.

5.3 PROBLEM DEFINITION

UFP Worksheet # 10 outlines the Problem Definition. The overall objective of the sampling oversight activities to be conducted under this WA is to assess the reliability of the analytical and field data to be collected by the PRP. To achieve this objective, HGL will collect data to address the following:

- It is unknown whether the PRP will perform PDI field activities in accordance with approved project plans (Appendix A).
- It is unknown whether the analytical laboratory data collected by the PRP will be reproducible.

5.4 QUALITY OBJECTIVES AND CRITERIA FOR MEASUREMENT

5.4.1 End Uses of the Data

The end use of the field and analytical data is to assist EPA in assessing the reliability of the PRP's data.

5.4.2 Data Types

The relative quality of analytical data is commonly described in three general categories: "definitive data," "screening data with definitive confirmation," or "screening data without definitive confirmation". For this project, the analytical data generated by the EPA Region 3 approved laboratory(ies) will constitute definitive data. The laboratory analytical data collected for this project will be used for decision-making and will be required to meet the requirements of definitive data, including the use of validated methods, laboratory participation in performance evaluation analysis programs, documentation of conformance to project and method QC requirements, and data validation to ensure performance criteria were met on a per-result basis. The field data that will be collected for the project activities addressed by this QAPP will not be used for decision-making and will be considered screening data without definitive confirmation.

An additional data category of "other" is also defined in the guidance. This category is used to define data that do not fit exactly into the screening data category or the definitive data category. Types of data that are included in the other category include photoionization detector field screening measurements, water quality measurements taken with a field meter, water level measurements, and global positioning system data. The PRP will collect field screening measurements, groundwater elevation data and water quality data during the sampling events, and HGL will use these "other" data in assessment of the PRP's performance.

The data to be collected as part of this WA and the associated DQO categories are listed in Table 5.1.

Table 5.1
Data Types and Data Quality Objective Categories

Data Type	Purpose	DQO Category
VOC data from the analysis of split groundwater and soil samples. The list of analytes will match the PRP's analytical suite, as defined in the PRP's approved QAPP.	Split samples will be submitted for laboratory analysis to assess the reliability of the analytical data obtained by the PRP	Definitive
Aqueous and solid PE samples analyses. The list of analytes will match the PRP's analytical suite, as defined in the PRP's approved QAPP.	PE samples will be submitted for laboratory analysis to assess the reliability of the analytical data produced by each laboratory	Definitive

5.4.3 Data Quality Objectives

The following subsections describe the development of DQOs for this WA. The DQO process described below is to support a data end use of definitive as defined in Section 0.9 of *Guidance on Systematic Planning Using the Data Quality Objectives Process* (EPA, 2006).

5.4.3.1 Step 1: State the Problem

The problems to be addressed by the analytical data are identified in Section 5.3, and are presented on UFP Worksheet # 10.

5.4.3.2 Step 2: Identify the Goals of the Study

The goal of the WA is to assess the reliability of the analytical data collected by the PRP. This objective will be met by addressing the two specific questions identified below:

- Is the PRP conducting investigation activities in accordance with approved project plans? (Question 1)
- Are the PRP analytical data reproducible? (Question 2)

5.4.3.3 Step 3: Identify Information Inputs

Based on the principal study questions, the following information is required:

- Documentation of PRP activities performed during the PDI sampling events. (Question 1).
- Analytical results of PDI split samples. (Question 2).

5.4.3.4 Step 4: Define the Boundaries of the Study

The spatial boundary of the study is the entire area defined as OU2 [(see PDI figures (Geosyntec, 2013)]. The temporal boundary for this study is the duration of this WA.

5.4.3.5 Step 5: Develop the Analytic Approach

The following decision rules have been developed for the data analysis:

Question 1:

If the PRP conducts PDI field activities in accordance with the approved project plans, then it will be determined that the PRP is conducting the PDI in a defensible manner that should produce reliable results. If the PRP deviates from the approved project plans, then it is possible for the PRP's field activities to affect the reliability of the field and analytical data.

Question 2:

If the PRP analytical data and the split-sample analytical data are similar (that is, having a relative percent difference [RPD] of 50 percent or less), then it will be determined that the PRP analytical results are reproducible and valid. If the PRP analytical results and split sample analytical results have a RPD greater than 50 percent then the reproducibility of the data is questionable and, based on the reason for the high RPD, the associated data will be considered an estimate or non-valid. The results of the comparison test will be submitted to EPA in accordance with the approved WA scope. In order to evaluate the potential for interlaboratory differences to affect the reported results, PE samples will be submitted to each laboratory. As described in Section 4.3 the results for the analyses of the PE samples will be compared to the acceptance limits calculated by the PE sample provider.

5.4.3.6 Step 6: Specify Performance or Acceptance Criteria

Question 1:

Oversight of the PRP field activities will be conducted during the PDI. All PRP activities will be assessed against the EPA-approved PRP PDI project plans to determine whether any deviations from proposed activities occurred. Any deviations from approved sampling methodologies presented in the project plans will be assessed to determine whether there is any resulting impact to sample integrity or influence on investigation results.

Question 2:

The RPD between the validated PRP analytical data and the associated validated split sample analytical data will be calculated. RPD values of 50 percent or less will indicate that the PRP data are reliable. Analytical results with RPDs greater than 50 percent between the two datasets may be considered estimated or non-valid, depending on the cause of the high RPDs.

Regardless of the RPD between the two datasets, the PRP analytical data and associated EPA validated split sample analytical data will be compared to the site-specific threshold values. For this project, the soil threshold values will consist of the Soil Remediation Standards (SRSs) (as presented in the OU1 Record of Decision [ROD] [EPA, 2009]). Interim groundwater remediation standards presented in the OU#1 ROD (EPA, 2009) will be utilized as groundwater threshold values. If an SRS does not exist for a detected analyte, then the lowest values between the preliminary remediation goals (PRGs) specified in the Remedial Investigation (RI) risk assessments and the EPA regional screening levels (RSLs) will be utilized. When the analytical data from both datasets are above or below a threshold value, the analytical data determined to be valid based on the RPD comparison process discussed above will be retained. When the PRP analytical data exceed a threshold value and the EPA validated split sample analytical data do not, then the PRP analytical data will be considered the valid results. If the EPA validated split sample analytical data exceed a threshold value and the PRP analytical data do not, then the EPA validated split sample analytical data will be considered the valid results.

PE sample results will be used to provide supplemental information to guide the interpretation of the split sample datasets. In cases where one laboratory produces passing results for an analyte and another produces results that do not meet the acceptance criteria for that analyte, the impact of this discrepancy will be evaluated in light of the datasets produced by the two laboratories. In general, sample results for analytes that are within the warning range in the PE sample will be considered to be estimated, while those sample results for analytes that are outside the warning range in the PE sample will be considered for rejection, depending on the direction of bias and whether the affected sample results are detected or nondetected.

5.4.3.7 Step 7: Develop the Plan for Obtaining Data

The data collection plan (sampling program) is described in detail in FSP Sections 3.0 and 4.0.

5.4.4 Data Measurement Quality Objectives

Data quality indicators for this site are in accordance with the *Generic Site-Specific QAPP, EPA Region 3, RAC 2 Contract*. The associated analyte and screening level summary table for this WA is presented in the EPA-approved PRP QAPP (Appendix A).

5.4.5 Field Measurements

Potentially several field measurements will be collected by the PRPs, including visual observations, well elevation data, and groundwater water quality parameter readings (i.e., pH, temperature, dissolved oxygen, specific conductivity, turbidity, and oxidation-reduction potential). For groundwater sampling, the last round of field measurements will be recorded in the applicable HGL field forms and field logbook. HGL will present all field data in the Field Investigation Reports.

5.5 SPECIAL TRAINING REQUIREMENTS

Training requirements for working at the Central Chemical Superfund Site will comply with the *Generic Site-Specific QAPP, EPA Region 3 RAC2 Contract*. All HGL personnel working at the site will comply with the health and safety training requirements stated in the Code of Federal Regulations (CFR) Title 29 Parts 1910 and 1926. Personnel will additionally participate in an annual medical monitoring program as required by Occupational Safety and Health Administration. All HGL personnel will understand the proper operation of field meters and all sampling procedures to be conducted by the PRP.

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WORKSHEETS

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QAPP Worksheet #6
Communication Pathways

Communication Drivers	Responsible Entity	Name	Contact Information	Procedure (Timing, pathways, etc.)
QAPP and SAP Amendments	HGL	Ex. 4 - CBI Project Manager (PM)	(215) 636-0667	HGL Project Manager will send QAPP/SAP amendments to EPA Work Assignment Manager (WAM) for approval.
Notifications of PRP Project Schedule and Delays	EPA	Sharon Fang, EPA WAM	(215) 814-3018	The EPA WAM will notify the HGL PM of the PRP field schedule at least one month in advance of the field events as well as any delays encountered by the PRP prior to and during the sampling events.
Notifications of Project Delays	HGL	Ex. 4 - CBI, PM	(215) 636-0667	If HGL encounters or anticipates delays, the EPA WAM will be notified by verbal communication immediately with email or memo follow-up
Changes in Site Conditions or Field Plan	HGL	Ex. 4 - CBI, Primary Oversight Hydrogeologist; Ex. 4 - CBI, HGL Field Team Leader (FTL)	Ex. 4 - CBI (215) 636-0667	If any changes or modifications are necessary during implementation of the field work, the Primary Oversight Hydrogeologist (oversight related issues) or the HGL FTL (sample related issues) will contact the HGL PM who will then contact the EPA WAM. Initial communications will be verbal with email or memo follow-up.
Issues of Analytical Data Quality	OASQA	Carroll Harris	Harris.carroll@epa.gov	If issues with data quality, field data collection or reporting limits are encountered, the EPA OASQA will notify the HGL PM. The EPA OASQA and the HGL PM will develop a plan to address the quality issues; however, any modifications that could potentially impact the approved WA scope of work must be approved by the EPA WAM/EPA Contract Officer prior to implementation.
Investigation Trip Reports	HGL	Ex. 4 - CBI, PM	(215) 636-0667	HGL will provide Trip reports for the sampling event
Analytical Services	HGL	Ex. 4 - CBI FTL	(215) 636-0667	The HGL PM will coordinate analytical service requests with EPA's OSAQA and/or laboratories.
Analytical Validation Services	EPA	EPA Environmental Services Assistance Team (ESAT)	To be determined	The EPA ESAT will conduct data validation and provide the results to HGL once data packages are complete.

QAPP = Quality Assurance Project Plan
EPA = U.S. Environmental Protection Agency
TBD = To Be Determined
ESAT = Environmental Services Assistance Team
SAP = Sampling and Analysis Plan
WAM = Work Assignment Manager
OASQA = EPA Office of Analytical Services and Quality Assurance
HGL = HydroGeoLogic, Inc.
PRP = Potentially Responsible Party

QAPP Worksheet #7
Personnel Responsibilities and Qualifications Table

Name	Title	Organizational Affiliation
Sharon Fang	EPA WAM	EPA Region 3 1650 Arch Street Philadelphia, PA 19103 (215) 814-3018
Ex. 4 - CBI	HGL RAC2 Program Manager	HydroGeoLogic, Inc. 11107 Sunset Hills Road, Suite 400 Reston, VA 20190 Ex. 4 - CBI
James Clark	RAC2 Contracting Officer	EPA Region 3 1650 Arch Street Philadelphia, PA 19103 (215) 814-5198
Ex. 4 - CBI	HGL PM	HydroGeoLogic, Inc. 801 Arch Street; Suite 504 Philadelphia, PA 19107 (215) 636-0667
Ex. 4 - CBI	FTL Site Safety and Health Officer	HydroGeoLogic, Inc. 801 Arch Street Suite 504; Philadelphia, PA 19107 (215) 636-0667
Ex. 4 - CBI	Primary Oversight Hydrogeologist	HydroGeoLogic, Inc. 11107 Sunset Hills Road Reston, VA 20190 Ex. 4 - CBI
Ex. 4 - CBI	HGL Corporate Health and Safety Director	HydroGeoLogic, Inc. 11107 Sunset Hills Road Reston, VA 20190 Ex. 4 - CBI
Ex. 4 - CBI	HGL Database Manager	HydroGeoLogic, Inc. 11107 Sunset Hills Road, Suite 400 Reston, VA 20190 Ex. 4 - CBI
Ex. 4 - CBI	HGL Chemist	HydroGeoLogic, Inc. 11107 Sunset Hills Road Reston, VA 20190 Ex. 4 - CBI

EPA = U. S. Environmental Protection Agency
WAM = Work Assignment Manager
HGL = HydroGeoLogic, Inc.
RAC = Remedial Action Contract

QAPP Worksheet #10
Problem Definition

The problem to be addressed by the project:
The overall objective of this project is to collect data to allow EPA to assess the reliability of the field and analytical to be collected by the PRP during the PDI. To achieve this objective, HGL will perform oversight activities during the PDI field events and will accept groundwater and soil split samples from the PRP for submission to an EPA-approved laboratory independent of the PRP's laboratory. HGL will also evaluate the results of PE samples analyzed by the PRP's laboratory and the groundwater split sample laboratory.

The environmental questions being asked:

- Is the PRP conducting PDI field activities in accordance with approved project plans? (Question 1)
- Are the PRP analytical data reproducible? (Question 2)

Observations from any site reconnaissance reports:
Prior oversight of PRP field activities indicated the PRP followed the EPA-approved work plan.

A synopsis of secondary data or information from site reports:
Based on previous analytical data, groundwater contaminants of concern include VOCs in groundwater and soil. The nature and extent of the contamination is not fully characterized.

The possible classes of contaminants and the affected matrices:
VOCs in groundwater and soil.

The rationale for inclusion of chemical and nonchemical analyses:
Analytical laboratory data are required to assess whether the PRP's chemical data can be reproduced.

Non-chemical data and field observations are required to assess whether the PRP is performing field activities in accordance with the approved work plans.

Although the PRP will also be submitting samples for analysis for groundwater chemistry parameters to support decisions about remedial alternatives, these data do not relate directly to characterizing the nature and extent of site contamination and split sample evaluation will only be performed for VOCs datasets.

Project decision conditions (If…, then…@ statements):

The following decision rules have been developed for the data analysis:

If the PRP conducts PDI field activities in accordance with the approved project plans, then it will be determined that the PRP is conducting the PDI in a defensible manner that should produce reliable results. If the PRP deviates from the approved project plans, then it is possible for the PRP's field activities to affect the reliability of the field and analytical data.

If the PRP analytical data and the split-sample analytical data are similar (that is, having an RPD of 50 percent or less), then it will be determined that the PRP analytical results are reproducible and valid. If the PRP analytical results and split sample analytical results have a RPD greater than 50 percent, then the reproducibility of the data is questionable and, based on the reason for the high RPD, the associated data will be considered an estimate or non-valid. The results of the comparison test will be submitted to EPA in accordance with the approved WA scope. The results of PE sample analysis will be used to as one line of evidence when attempting to attribute cause to interlaboratory differences.

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6.0 MEASUREMENT AND DATA ACQUISITION

6.1 SAMPLE PROCESS DESIGN

The sampling process design presented in the FSP was developed to meet the DQOs discussed in Section 6.4. Information in this section provides details related to the sample collection to ensure the split sample data are of known and acceptable quality. The number, types, locations, and analysis of samples are presented in Table 3.1.

6.2 SAMPLING METHOD REQUIREMENTS

All sampling activities will be conducted by the PRP. PRP sampling activities are dictated by the EPA-approved project plans included as Appendix A. Information in this section discusses the sample container and collection requirements specific to each analytical laboratory where sample analysis will be performed.

6.2.1 Sampling Equipment and Preparation

Sampling equipment required for the field program for acceptance and submittal of split samples, health and safety monitoring, and general field operations is listed in Table 4.1.

Field preparatory activities will include review of this FSP and QAPP and pertinent SOPs by all HGL field personnel; a review of the PRP project plans attached to this document as Appendix A; a field planning meeting with HGL field personnel to discuss the content of the FSP, QAPP, and HSP; general logistics related to implementation of the field program; and procurement of field equipment and supplies.

6.2.2 Sample Containers

To eliminate a potential data comparison error related to different bottleware suppliers, the PRP will provide all sample bottles necessary for the collection and submittal of the split samples. The PRP will provide sample containers that are pre-cleaned and traceable to the facility that performed the cleaning. Sampling containers will not be cleaned or rinsed in the field. The PRP will be required to provide copies of certified clean certificates for the bottleware used for split sampling to the HGL oversight crew. The absence of the certificates will call into question the associated sampling results. Table 6.1 specifies the analytical methods, sample containers, preservation requirements, and holding times for the analyses that will be conducted. HGL will monitor the PRP's activities to confirm that the PRP provides the correct sample containers and preserves the samples in accordance with the requirements of the EPA-approved PRP QAPP.

Table 6.1
Soil and Aqueous Analytical Methods and Sample Preservation, Holding Time, and Container Requirements

Analytical Parameter[(1)]	Sample Matrix	Analytical Method	Sample Preservation	Holding Time	Container Type
VOCs	Soil	SW846 8260B	Cool, 4 °C; one vial preserved with methanol and two vials preserved with sodium bisulfate solution	14 days	Three Glass 40-milliliter vials, each with Teflon® lined septum
	Aqueous	SW846 8260B	Cool, 4 °C; HCl to pH ≤2	14 days	Three Glass 40-milliliter vials, each with Teflon® lined septum

Note: Aqueous samples are for trip blanks and equipment blanks only
HCl = hydrochloric acid

6.2.3 Sample Collection for Off-site EPA Laboratory Analysis

HGL will accept split soil samples and associated QA/QC samples from the PRP, as described in Section 4.3 of the FSP. HGL will pack and ship the samples to the analytical laboratory. Documentation that will be delivered with samples includes sample labels and traffic report/chain of custody (TR/COC) forms as specified in Section 6.3. Samples will be shipped to the EPA-approved laboratory or to one or more CLP laboratories for overnight delivery via an overnight courier service.

6.3 SAMPLE HANDLING AND CUSTODY REQUIREMENTS

Custody and documentation for field and laboratory work are described below, followed by a discussion of corrections to documentation. Attached UFP Worksheet #26 summarizes the Sample Handling System and personnel responsible for each task.

6.3.1 Field Sample Custody and Documentation

The purpose and description of the sample label and the TR/COC record are discussed in the following sections. All identification and tracking procedures for samples will follow HGL SOP No. 3 *Chain of Custody*, SOP No. 4 *Sample Identification, Labeling and Packaging*, and SOP No. 5 *Sample Location Documentation*.

QC samples, trip and equipment blank(s), will be identified by an “TB” or “EB” following the sequential number. Field duplicates will not be identified.

The location of each sample, as well as time and date of sample collections and requested analyses, will be recorded on a field sheet completed for each sample. An example field sheet is provided in Appendix B.

6.3.1.1 Chain of Custody Requirements

Sample COC procedures will follow the requirements set forth in HGL SOP No. 3, *Chain of Custody*. F2L is the mandatory electronic format for the TR/COC for all CLP requests. The TR/COC record is employed as physical evidence of sample custody and control. This record system provides the means to identify, track, and monitor each individual sample from the point of collection through final data reporting. An example TR/COC record is included with the field forms in Appendix B.

A copy of the TR/COC, included in Appendix B, will be completed for each accepted sample that will be submitted to the EPA Region 3 laboratory for analysis. The TR/COC will be completed by the field sampling team. The field sampler will sign off on the TR/COC when the samples are relinquished to the sample coordinator for packaging and shipping of the samples to the EPA-approved laboratory.

The sample coordinator will sign the TR/COC when accepting custody of these samples, and shall relinquish custody to the shipping firm for shipment by noting the firm name and the air bill number on the TR/COC form. The TR/COC shall be shipped to the EPA-approved laboratory with the samples, and a copy of the TR/COC shall be maintained by HGL.

6.3.1.2 Sample Packaging and Shipping

Samples will be packaged and shipped promptly after collection. When sent by common carrier, packaging, labeling, and shipping of hazardous materials are regulated by the U.S. Department of Transportation (DOT) under CFR Title 49, Part 172. Samples will be handled, packed, and shipped in accordance with HGL SOP No. 4, *Sample Identification, Labeling and Packaging*, which includes applicable DOT requirements.

All samples will be shipped by an overnight delivery service to the designated laboratory. A copy of each air bill will be retained by HGL and the air bill number will be recorded in the field logbook so the cooler can be easily tracked if mishandled.

6.3.1.3 Field Logbook(s) and Records

Field Logbooks

An important element of field documentation is the proper maintenance by field personnel of the site-specific field logbooks. Field logbook(s) will be maintained by the field team in accordance with HGL's SOP No. 6, *Use and Maintenance of Field Logbooks*. The logbook is an accounting of the accomplishment of scheduled activities, and will duly note problems or deviations from the governing plans and observations relating to the field program. Logbooks will be kept in the field team member's possession or in a secure place when not being used. The HGL FTL will periodically check logbook entries to make sure the required information is present as specified in the SOP.

Field Forms

In addition to the field logbooks, field forms will be used to record sampling activities and measurements taken in the field. Field forms to be used during this project are included in Appendix B. Information included on the field sheets will be repeated in the field logbook. Each completed field sheet will be referenced in the field logbook, as appropriate. Field forms include the following:

- Sample Data Sheet
- Safety Briefing Form (provided by PRP)
- TR/COC form
- Boring Logs (provided by PRP)
- Change Request Form (if needed)
- Nonconformance report (if needed)

At the conclusion of site activities, the logbook and field forms will be incorporated into the project file as part of HGL's document control procedures. Completed field sheets also will be maintained in the project file.

Photographs

Field activities and sampling events will be documented using a digital camera. For each photograph, the following items will be noted in a photographic record recorded in the applicable field logbook:

- Date and time of photograph;
- Name of the photographer;
- Identification of the site or sample by sample number;
- General direction the photograph is oriented;
- Brief description of photo content, and;
- Sequential number of the photograph recorded on the disk.

6.3.2 Laboratory Custody Procedures and Documentation

Laboratory custody procedures and associated documentation are provided in the laboratory's QA Manual.

6.3.3 Corrections to and Deviations from Documentation

The procedures for correcting erroneous field entries are described in HGL SOP No. 6, *Use and Maintenance of Field Logbooks*. If required, a single strikeout initialed and dated is required to document changes. The correct information should be entered in close proximity to the erroneous entry. The same procedure will be used on field logbooks, field sheets and TR/COC records.

Any deviations from the HGL project plans (FSP, QAPP, Health and Safety Plan [HSP], SOPs) will be recorded in the appropriate field logbook. A field change request form included in Appendix B will be completed prior to implementing the deviation from the HGL project plans. The field change request form will be signed by the HGL FTL and PM. Significant deviations will require signature by the EPA WAM before the change is implemented. Completed field change request forms will be included and discussed in the field investigation report. Any deviations in the field activities from the PRP project plans will only be noted in the field notebook.

6.4 ANALYTICAL METHODS REQUIREMENTS

6.4.1 Laboratory Quality Assurance Program

Samples accepted during this project will be analyzed in accordance with standard EPA and/or nationally accepted analytical procedures. Each laboratory will adhere to all applicable QA/QC requirements stated in the applicable method and its laboratory QA Plan.

6.4.2 Methods for Off-Site Laboratory Analysis

Analytical methods that will be used by the EPA Region 3 laboratory to analyze split samples are detailed in Table 6.1.

6.5 QUALITY CONTROL REQUIREMENTS

6.5.1 Field Quality Control Samples

Field QC samples will be used to assess the accuracy and precision of field collection activities. QC samples will be submitted to the EPA Region 3 laboratory and will include field duplicates, trip blanks, and equipment rinsate blanks. Table 3.1 provides information on the number and types of analyses that will be performed, along with the number of QC samples that will be accepted and collected.

QC samples and rationale are discussed in the *Generic Site-Specific QAPP for EPA Region 3 RAC2 Contract,* dated August 2008.

6.5.2 Laboratory Quality Control Samples

Laboratory QC samples will include continuing calibration checks, method blanks, laboratory control samples, laboratory duplicates, surrogate spikes, and matrix spikes are required by the analytical method. Laboratory QC samples and rationale are discussed in the *Generic Site-Specific QAPP for EPA Region 3 RAC2 Contract,* dated August 2008. The EPA-approved laboratory will analyze laboratory QC samples in accordance with its in-house QA plan and method requirements.

6.6 EQUIPMENT MAINTENANCE PROCEDURES

All equipment will be maintained in accordance with the *Generic Site-Specific QAPP, Region 3 RAC2 Contract*, dated August 2008.

6.7 INSTRUMENT CALIBRATION PROCEDURES AND FREQUENCY

6.7.1 Field Equipment

No field sampling equipment is anticipated for this project. All sampling activities and health and safety monitoring activities will be conducted by the PRP.

6.7.2 Laboratory Equipment

Calibration of laboratory equipment will be based on written procedures approved by laboratory management and included in the laboratory's QA plan. Documentation of laboratory equipment calibration will be maintained by the laboratory where the work is performed.

Records of initial calibration, continuing calibration and verification, repair, and replacement will be maintained by the laboratory where the work is performed.

6.8 ACCEPTANCE REQUIREMENTS FOR SUPPLIES

Prior to acceptance, all supplies and consumables will be inspected to ensure that they are in satisfactory condition and free of defects. If defects are noted, the item will be replaced. HGL personnel will inspect all supplies and consumables provided by PRP.

6.9 NONDIRECT MEASUREMENT DATA ACQUISITION REQUIREMENTS

Secondary data requirements are presented in UFP Worksheet #13.

WORKSHEETS

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QAPP Worksheet #13
Secondary Data Criteria and Limitations Table

Secondary Data	Data Source	Data Generator(s)	How Data Will Be Used	Limitations on Data Use
Soil and Groundwater Contamination Distribution	2002 Remedial Investigation Report	Prepared by Tetra Tech/Black and Veatch for EPA Region 3	Background information	The data was generated with an EPA-approved QAPP; therefore, the data is considered usable.
Previous Groundwater Analytical Data	2003 Groundwater Sampling Report	Environmental Resource Management (ERM)	Comparison of historic versus current groundwater contamination distribution	Data quality is unknown

QAPP Worksheet #26
Sample Handling System

SAMPLE COLLECTION, PACKAGING, AND SHIPMENT
Sample Collection (Personnel/Organization): HGL FTL or Primary Oversight Hydrogeologist
Sample Packaging (Personnel/Organization): HGL FTL
Coordination of Shipment (Personnel/Organization): HGL FTL
Type of Shipment/Carrier: Cooler/FED EX or UPS
SAMPLE RECEIPT AND ANALYSIS
Sample Receipt (Personnel/Organization): CLP Laboratory or Office of Analytical Services and QA Laboratory
Sample Custody and Storage (Personnel/Organization): HGL and assigned laboratory
Sample Preparation (Personnel/Organization): PRP and HGL FTL
Sample Determinative Analysis (Personnel/Organization): Assigned Laboratory
SAMPLE ARCHIVING
Field Sample Storage (No. of days from sample collection): HGL FTL
Sample Extract/Digestate Storage (No. of days from extraction/digestion): Assigned Laboratory
Biological Sample Storage (No. of days from sample collection): Not Applicable
SAMPLE DISPOSAL
Personnel/Organization: Assigned Laboratory
Number of Days from Analysis: Assigned Laboratory

7.0 ASSESSMENT AND OVERSIGHT

7.1 ASSESSMENTS AND RESPONSE ACTIONS

Assessment and response actions will be in accordance with the *Generic Site-Specific QAPP, Region 3 RAC2 Contract,* dated July 2007. Assessment activities are outlined in UFP Worksheet #31, and procedures for handling project deviations are outlined in UFP Worksheet #32.

7.2 REPORTS TO MANAGEMENT

Reports will be generated for all QA audits that are conducted and provided to the QA Manager. Reports will include deficiencies that were noted during the audit and corrective actions that were planned or implemented.

The EPA WAM will receive QA reports whenever major quality problems cannot be immediately corrected.

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WORKSHEETS

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QAPP Worksheet #31
Planned Project Assessments Table

Possible Assessment Types	Frequency	Internal or External	Organization Performing Assessment	Person(s) Responsible for Performing Assessment	Person(s) Responsible for Responding to Assessment Findings	Person(s) Responsible for Identifying and Implementing Corrective Actions	Person(s) Responsible for Monitoring Effectiveness of Corrective Actions
Technical Reviews	Each Report	Internal	HGL	HGL Technical Reviewer (Cindy Crane, or designee)	HGL PM	HGL PM	HGL Technical Reviewer (Cindy Crane, or designee)
Data Validation	Each Sampling Event	External	ESAT	ESAT Data Validator	CLP Laboratory or HGL PM	CLP Laboratory Manager or HGL PM	EPA's Office of Analytical Services and QA

HGL = HydroGeoLogic, Inc.
QA = quality assurance
ESAT = EPA Environmental Services Assistance Team
EPA = United States Environmental Protection Agency
CLP = Contract Laboratory Program

QAPP Worksheet #32
Assessment Findings and Corrective Action Responses

Possible Assessment Type	Nature of Deficiencies Documentation	Individual(s) Notified of Findings	Timeframe of Notification	Nature of Corrective Action Response Documentation	Individual(s) Receiving Corrective Action Response	Timeframe for Response
Technical Reviews	Written comments and/or track changes	Ex. 4 - CBI HGL PM	Immediately upon review	HGL Document Tracking and Review Form	Technical Review (Cindy Crane or designee)	Five days to address written comments
Data Validation	Memo	Ex. 4 - CBI HGL PM	Determined by Laboratory	Memo-to-File	EPA Office of Analytical Services and QA (Harris.Caroll@epamail.epa.gov	One day

HGL = HydroGeoLogic, Inc.
EPA = United States Environmental Protection Agency

8.0 DATA VALIDATION REQUIREMENTS AND USABILITY

8.1 QUALITY CHECK OF EPA DATA

Analytical data packages will be received from the EPA laboratory in both hard copy and electronic data deliverable (EDD) format for uploading into the project database. EPA will validate the data prior to providing the results to HGL. The project chemist or designee will perform a quality check of the EPA results by reviewing sample numbers versus TR/COCs and EPA field sheets for consistency and completeness, reviewing any qualifiers added by the EPA validator to determine usability of the results, and reviewing results of field QC samples such as field duplicates, trip blanks, or field blanks that are submitted to the EPA laboratory for analysis.

All VOCs split sample data will receive full validation as described in *EPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review* (EPA, 2008). The Usability Assessment is provided in UFP Worksheet #37. The laboratory selected to analyze the samples will produce data packages, to include instrument raw data that can undergo full data validation by EPA's data validation contractor.

8.2 RECONCILIATION WITH USER REQUIREMENTS

8.2.1 DQO Reconciliation

After the data quality reviews are complete as discussed in Sections 8.1, HGL will determine which data are usable for their intended purposes based on the DQOs that have been established for this project. Reconciliation with the DQOs and overall project objectives will be discussed in the data compatibility report.

8.2.2 Data Reduction and Tabulation

Data reduction and tabulation will be performed using the various data that have been uploaded into the Environmental Quality Information System (EQuIS) database during the course of the WA as described in Section 9.2.

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WORKSHEET

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QAPP Worksheet #37
Usability Assessment

Summarize the usability assessment process and all procedures, including interim steps and any statistics, equations, and computer algorithms that will be used:

The usability assessment will include a measure or determination of precision, accuracy, completeness, representativeness, comparability and sensitivity. Precision is quantitative and most often expressed in terms of RPD. The RPD can be calculated from the following equation:

$$RPD = [(|x_1-x_2|)/((x_1+x_2)/2)] \times 100$$

Where x_1 = regular sample result
x_2 = duplicate sample result

For intralaboratory duplicate analyses, the acceptable performance limit will be as defined in the approved PRP QAPP. Chemical analytical data will be evaluated for precision using field duplicates, laboratory duplicates, matrix spike/matrix spike duplicates (MS/MSDs), and laboratory control sample/laboratory control sample duplicates (LCS/LCSDs), as applicable. For comparison of interlaboratory split sample analysis results, a performance limit of RPD less than 50 percent has been adopted for this project.

Accuracy is the degree of agreement of a measurement with an accepted reference or true value, and is a measure of the bias in a system. Accuracy is quantitative and usually expressed as the percent recovery (%R) of a sample result. Acceptable QC limits for LCS/LCSDs, method-defined for surrogates, and laboratory-defined for MS/MSDs will be as defined in the approved PRP QAPP.

Completeness is a measure of the amount of usable data obtained from a measurement system compared to the amount that was expected to be obtained under normal conditions. Data will assess usability of the results. Those data that are validated and need no qualification, or are qualified as estimated data are considered usable. Rejected data are considered to represent unusable data points for the purposes of this calculation. Completeness will be calculated after the data have been through quality review. For this work, a completeness goal of 90 percent is projected for all analytical data. If this goal is not met, additional sampling may be necessary to adequately achieve project objectives.

QAPP Worksheet #37 (continued)
Usability Assessment

Representativeness expresses the degree to which sample data accurately and precisely represent (a) a characteristic of a population, (b) parameter variations at a sampling point, and/or (c) an environmental condition. Good representativeness will be achieved through: (a) careful, informed selection of sampling sites; (b) selection of testing parameters and methods that adequately define and characterize the extent of possible contamination and meet the required parameter reporting limits; (c) proper gathering and handling of samples to avoid interference and prevent contamination and loss; (d) collection of a sufficient number of samples to allow characterization; and (e) evaluation of each detected result against associated blank results to determine if the detected analyte is potentially not indicative of actual site conditions.

Consistency in the acquisition, handling, and analysis of samples is necessary for comparing results. Where appropriate, the results of analyses obtained will be compared with the results obtained in previous studies. Standard EPA analytical methods and QC will be used to ensure comparability of results with other analyses performed in a similar manner.

Sensitivity is related to the ability to compare analytical results with project-specific levels of interest, such as delineation levels or action levels. Analytical quantitation limits for the various sample analytes should be below the level of interest to allow an effective comparison. For this project, the analytical reporting limits provided in the approved PRP QAPP are the minimum levels that the laboratory will report analytical results without a qualifier when an analyte is detected. The laboratory can typically detect analytes at concentrations of up to an order of magnitude lower than the reporting limits shown in these tables. In this case, when a positive detection is less than the reporting limit but above the method detection limit, the value will be reported and qualified as an estimated concentration (J).

Describe the evaluative procedures used to assess overall measurement error associated with the project:
Field duplicate samples will be collected to provide a measure of the contribution to overall variability of field-related sources. Chemical analytical data will be reviewed for accuracy using surrogates, MS/MSDs, and LCS/LCSDs, as applicable. The overall accuracy of laboratory data also will be assessed using a review of equipment calibration and method-specific QC elements. Representativeness is a consideration that will be employed during all sample location and collection efforts and will be assessed qualitatively by reviewing field procedures and reviewing actual sample locations versus planned locations.

PE sample analyses will be used as an additional evaluation tool to determine if either laboratory has an inherent difficulty in analyzing for one or more target analytes. The results of the RPD comparison between the two sets of analyses for each split sample will be evaluated in the light of the PE results for each laboratory for those analytes that show discrepancies.

QAPP Worksheet #37 (continued)
Usability Assessment

Identify the personnel responsible for performing the usability assessment:
Data Manager: Ex. 4 - CBI
Chemist: Ex. 4 - CBI
Project Manager: Ex. 4 - CBI

Describe the documentation that will be generated during usability assessment and how usability assessment results will be presented so that they identify trends, relationships (correlations), and anomalies:
Analytical data packages will be received from the EPA laboratory in both hard copy and electronic data deliverable format for uploading into the project database. EPA will validate the data prior to providing it to HGL, in accordance with EPA CLP National Functional Guidelines for Superfund Organic Methods Data Review (EPA, 2008). The HGL project chemist or designee will perform a quality check of the EPA results by reviewing sample numbers versus TR/COCs and EPA field sheets for consistency and completeness, reviewing any qualifiers added by the EPA validator to determine usability of the results, and reviewing results of field QC samples such as field duplicates, trip blanks, or rinsate blanks that are submitted to the EPA laboratory for analysis. HGL will add the data to an existing EQuIS database for the site. The EQuIS database will be utilized to manage the data. Tables summarizing the results of sample analysis will be generated from the database after the sampling effort is completed and validated analytical results have been received. Reconciliation with the DQOs and overall project objectives will be discussed in the data reports.

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PART 3: DATA MANAGEMENT PLAN

9.0 DATA MANAGEMENT AND VISUALIZATION

9.1 INTRODUCTION

The split sample acceptance activities to be conducted at this site will generate fixed laboratory data and other site-derived information. The analytical and field data will be entered into a single data management system for consistency in tracking samples; storing and retrieving data; evaluating analytical results; visualizing data; and generating data tables and reports. The DMP presented in this section was prepared to assist in implementing a successful data management strategy. The DMP for this project is in accordance with *Generic Site-Specific QAPP, Region 3 RAC2 Contract,* and is augmented by the requirements and procedures for split sample acceptance detailed in the FSP, and the analytical methodologies detailed in the QAPP.

9.1.1 Objectives of Data Management Plan

Successful data management results from coordinating data collection, control, storage, access, reduction, evaluation and reporting. This DMP documents the methodology that will be employed during project execution to link the various data management tools, including software packages, to assure that the various data and information types to be collected are systematically obtained and managed.

The specific objectives of this DMP are:

- Standardize and facilitate the collection, formatting, and transfer of project data into the data management system and components;
- Provide a structured data system that will support the end uses of the data (Note: The end uses of the data are detailed in Section 5.2 of the QAPP);
- Minimize the uncertainties associated with the data, data-derived products, and interpretation of results through defined QC measures and documented processes, assumptions and practices; and,
- Provide data that are adequately documented with descriptive information for technical defensibility and legal admissibility of the data.

9.1.2 Data Management Team Organization

A data management team has been established for the Site and is presented in UFP Worksheet # 7 (see Section 5).

9.1.3 Roles and Responsibilities of Data Management Team

The roles and responsibilities of the data management team are in accordance with the *Generic Site-Specific QAPP, Region 3 RAC2 Contract*. The responsibilities of the members of the data

management team are summarized in Table 9.1. Should the scope of the data require a division of labor, the project manager in consultation with the data manager will determine assignments, as appropriate, to assure the best work flow.

9.1.4 Data Management Process

The data management process is in accordance with the *Generic Site-Specific QAPP, Region 3 RAC2 Contract*. The data management process begins at the planning stages of the project and was employed during the planning sessions held with the EPA. At the early planning stage of the WA, the data sources, required tools, and end uses of the data were identified and the findings used to develop this site-specific DMP.

QC steps are implemented at each step of the data flow in which data undergo a transformation. Transformations include conversion from hardcopy to electronic form, uploads to the database, and output queries from the database. After each process step, a 10 percent QC check is performed of the transformed data against the original dataset to ensure that no data were corrupted or lost.

The following are core concepts of the data management process:

- The Data Manager oversees the transfer of data from one member of the data management team to another and serves as the link between each step in the process.
- All data pass through a single repository to minimize the chance that data are duplicated or lost.

The post-processing (analysis) and reporting phases of the DMP create the majority of deliverables and are generated from the analysis of data and those who conducted that analysis. The Data Manager is responsible for providing to the staff responsible for the analysis of the data both the data needed and a clear list of the output required. The Data Manager is not, in most cases, involved in the creation of deliverables from analyzed data, but rather checks the completed deliverables against the scope and SAP to ensure that they are complete.

9.2 DATABASE

HGL will maintain the project database, and will ensure that the database is organized in a fashion that can be queried to support project data reporting needs. Validated analytical data will be entered into EQuIS.

9.2.1 Data Collection

All analytical sample data will be received from each laboratory following sample analysis as a staged electronic data deliverable (SEDD) for inclusion in the database. SEDDs will be received as an Extensible Markup Language (.xml) file as required by the EPA's CLP. As results may change during data validation, all validated data will supersede previous results.

9.2.1.1 Data Tracking Sheets

Once data have been collected, sample result packages will be checked by the Data Manager for completion and entered onto a sample tracking sheet by the Sample Manager. A sample tracking sheet will inventory samples collected and determine which results have not been received from the laboratory. Sample tracking sheets will be developed by exporting TR/COC forms generated through Forms 2 Lite (F2L) into an Excel spreadsheet. F2L is the field sample documentation program that will be used at the Site to track samples from collection to the laboratory. If data are missing, the Data Manager will contact the appropriate laboratory coordinator to obtain electronic/hard copies of the missing data.

9.2.1.2 Database Log

During the data manipulation process, the Data Manager will maintain a database log updated with project-specific assumptions and changes made.

9.2.2 Pre-Processing Non-SEDD Data

All data not received as a SEDD will be entered into a separate Excel spreadsheet in order to be loaded into the Site database, rather than directly keyed into the database through the user interface. This is done so that the loading quality checks are uniformly applied, and to assure that all data pass through the same QC process. Data included in this step are sample collection information, field parameters, soil boring and well construction logs, survey information and IDW information. All hand-entered data will receive a 100 percent QC check before being loaded into the database.

9.2.3 Processing Staged Electronic Data Deliverables

Each SEDD will be loaded into the Excel database by the Database Administrator (using the data loading tools provided in the software. Analytical data will be provided by EPA's data validation subcontractor in SEDD format and will not require revision to perform the Automated Data Review. All data in each SEDD will be validated by other EPA contractors before receipt by HGL.

9.2.4 Post-Processing

Data will be exported from the Excel database to EQuIS for analysis and visualization.

9.2.5 Reporting

Tables of analytical results will be generated from the database after is completed and validated analytical results have been received. These tables will include results for all constituents and any values (i.e., corresponding PRP results) against which the results will be compared. These tables will supplement the technical memorandum to be prepared by HGL.

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10.0 REFERENCES

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EPA, 2004. *Guidance for the Data Quality Objectives Process*, Publication No. EPA/600/R-96/055. September.

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APPENDIX A

FIELD FORMS

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FIELD SAMPLING REPORT

PROJECT : INVESTIGATION: _____
SAMPLE LOCATION: _____

SAMPLE INFORMATION

MATRIX _____

BEGINNING DEPTH _____ft bgs
END DEPTH _____ft bgs

DATE: _____ TIME: _____
GRAB ( ) COMPOSITE ( )

SAMPLING METHOD _____

SAMPLE ID: _____
CLP ID: _____

ASSOCIATED QA/QC SAMPLE: YES ( ) NO ( )

- DUP./REP. OF : _____
  DUP CLP ID:_____
- MS SAMPLE ID: _____
  MSD SAMPLE ID: _____
  MS CLP ID :_____ MSD CLP ID :_____

LABORATORY CASE #: _____

CONTAINER SIZE	CONTAINER TYPE	CONTAINER #	PRES	ANALYSIS	SAMPLE TAGS	Laboratory / TR-COC
				TCL VOCs		
				TCL SVOCs		
				TCL Pest/PCBs		
				TCL PCBs (Total)		
				TAL Metals (+Hg&Cn)		
				Total Organic Carbon		
				PCDD/PCDF		
				Hexav. Chromium		
				PCB Congeners		
				Explosives		
				Asbestos		
				Grain Size		
				Soil pH		

NOTABLE OBSERVATIONS

SAMPLE CHARACTERISTICS	MISCELLANEOUS
COLOR: ODOR:	
USCS Classification:	
Lithology:	

pH _____ PID Reading: _____ ORP: _____ Specific Conductivity_____

GENERAL INFORMATION

WEATHER: SUN/CLEAR _____ OVERCAST/RAIN _____ WIND DRIECTION _____ AMBIENT TEMP _____

SHIPMENT VIA: FED-X _____ UPS _____ COURIER _____ OTHER _____

COMMENTS: _____
_____
_____

SAMPLER: _____ OBSERVER: _____

USEPA Contract Laboratory Program
Organic Traffic Report & Chain of Custody Record

Case No: R

DAS No:

Region: 3	**Date Shipped:**	**Chain of Custody Record**	**Sampler Signature:**
Project Code:	**Carrier Name:**	**Relinquished By (Date / Time)**	**Received By (Date / Time)**
Account Code:	**Airbill:**	1	
CERCLIS ID:	**Shipped to:**	2	
Spill ID:		3	
Site Name/State:		4	
Project Leader:			
Action:			
Sampling Co: HGL			

ORGANIC SAMPLE No.	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSIS/ TURNAROUND	TAG No./ PRESERVATIVE/ Bottles	STATION LOCATION	SAMPLE COLLECT DATE/TIME		INORGANIC SAMPLE No.	QC Type
C0A57	Ground Water/ Nathan Doyle	L/G	CB Cong. (21)	11954 (Ice Only), 11955 (Ice Only) (2)	MC12-EFF-042612	S: 4/26/2012	9:05		--
C0A58	Ground Water/ Nathan Doyle	L/G	CB Cong. (21)	11956 (Ice Only), 11957 (Ice Only) (2)	MC12-EFF-2-042612	S: 4/26/2012	9:05		ld Duplicate of MC12-EFF-042(
C0A59	Ground Water/ Nathan Doyle	M/G	CB Cong. (21)	11958 (Ice Only), 11959 (Ice Only) (2)	MC12-INF-042612	S: 4/26/2012	9:00		--
C0A61	Surface Water/ Nathan Doyle	L/G	CB Cong. (21)	11961 (Ice Only) (1)	MC12-SWW-042612	S: 4/26/2012	8:30		--

Shipment for Case Complete? Y	**Sample(s) to be used for laboratory QC:**	**Additional Sampler Signature(s):**	**Chain of Custody Seal Number:**
Analysis Key:	**Concentration:** L = Low, M = Low/Medium, H = High	**Type/Designate:** Composite = C, Grab = G	**Shipment Iced?** _____

CB Cong. = CB Congeners

TR Number: 3-043013577-042612-0001

REGION COPY

PR provides preliminary results. Requests for preliminary results will increase analytical costs.

Send Copy to: Sample Management Office, Attn: Ex. 4 - CBI , CSC, 15000 Conference Center Dr., Chantilly, VA 20151-3819; Phone Ex. 4 - CBI Fax 703/818-4602

HGL
CHANGE REQUEST FORM

Contract/Project: _____ Date: _____

Requested by: _____

Description of requested change: _____

_____

_____

_____

_____

Reason for change: _____

_____

_____

_____

_____

Expected results or impact: _____

_____

_____

_____

Submit this form to the project manager immediately.

Required before implementation of major changes:

Approved by: _____ (Project Manager) Date: _____

Approved by: _____ (Title: _____) Date: _____

cc: QA Staff Member

12/2005

NONCONFORMANCE REPORT	DATE OF NCR	NCR NUMBER
	LOCATION OF NONCONFORMANCE	PAGE ___ OF ___
INITIATOR (NAME/ORGANIZATION/PHONE)	FOUND BY	DATE FOUND
RESPONSIBLE ORGANIZATION/INDIVIDUAL		PROGRAM
		PROJECT
DESCRIPTION OF NONCONFORMANCE	CATEGORY:	H&S Sampling/Analysis
[A] INITIATOR: DATE	QA/QC OFFICER DATE	CAR REQ'D YES NO
DISPOSITION:		
PROBABLE CAUSE:		
ACTIONS TAKEN TO PREVENT RECURRENCE:		
[B] PROPOSED BY:	NAME	DATE
JUSTIFICATION FOR ACCEPTANCE		
[C] INITIATOR:	NAME	DATE
VERIFICATION OF DISPOSITION AND CLOSURE APPROVAL		
REINSPECTION/RETEST REQUIRED YES NO	IF YES; DATE	RESULT
[D] QUALITY ASSURANCE:		
	NAME	DATE

APPENDIX B

HEALTH AND SAFETY PLAN

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SITE SPECIFIC SAFETY AND HEALTH PLAN

SECTION 1: GENERAL INFORMATION & DISCLAIMER	
CLIENT NAME: US EPA Region 3	PROJECT NAME: North Penn Area 5
PROJECT MANAGER: Ex. 4 - CBI	
PROJECT LEADER: Ex. 4 - CBI	REVISION DATE:
SITE SAFETY OFFICER: TBD	
PREPARED BY: Ex. 4 - CBI	DATE: 05/21/2013

NOTE: This Site Specific Safety and Health Plan (SSHP) has been prepared for use by HGL, Inc. employees for work at this site. HGL, Inc. is not responsible for its use by others. The plan is written for the specific site conditions, purposes, tasks, dates and personnel specified and must be amended and reviewed by those named in Section 16 if these conditions change.

Subcontractors shall be solely responsible for the health and safety of their employees and shall comply with all applicable laws and regulations. In accordance with 1910.120(b)(1)(iv) and (v), HGL, Inc. will inform subcontractors of the site emergency response procedures, and any potential fire, explosion, health, safety or other hazards by making this Site Specific Safety and Health Plan and site information obtained by others available during regular business hours. All contractors and subcontractors are responsible for: (1) developing their own Health and Safety Plan including a written Hazard Communication Program and any other written hazard specific programs required by federal, state and local laws and regulations; (2) providing their own personal protective equipment; (3) providing documentation that their employees have been health and safety trained in accordance with applicable federal, state and local laws and regulations; (4) providing evidence of medical surveillance and medical approvals for their employees; and (5) designating their own site safety officer responsible for ensuring that their employees comply with their own Health and Safety plan and taking any other additional measures required by their site activities.

If an upgrade to Level "C" or above is anticipated, this SSHP must be reviewed/approved by Corporate Health and Safety.

SECTION 2: PROJECT INFORMATION

(1) SITE INFORMATION

Site Name:	North Penn Area 5	Site Project Client Contact:	Sharon Fang
Address:	92 County Line Road	Phone No.:	215-814-3018
	Colmar, PA 18915	Site Health & Safety Contact:	Safety officer/field oversight TBD
		Phone No.:	

(2) SITE CLASSIFICATION: (check all that apply)

	Hazardous (RCRA)		Other
	Construction		
	Sanitary or C and D Landfill	Explain:	
	First Entry	North Penn 5 is a Superfund Site that is currently	
X	Hazardous (CERCLA/State Superfund)	Active as a manufacturer of packaging materials.	
	UST/LUST	Previously, the site was used to manufacture car	
	Manufacturing	Parts related to gates and trunks. The site is	
X	Previously Characterized	Contaminated with VOCs in soil and groundwater.	
X	Active	Main VOC is TCE.	
	Inactive		

(3) ENTRY OBJECTIVES AND DATES OF FIELD VISIT(S):

HGL will be overseeing the PRP field activities and accepting split samples. HGL will not be conducting any sampling at the Site. All samples Will be prepared by the PRP consultant and provided to HGL sealed and preserved.

(4) HGL TASKS:

Oversee and document PRP consultant's field activities

Accept and ship split samples to CLP Lab, samples will include soil and groundwater

TASKS PERFORMED BY OTHERS:

DPT, clearing/grubbing, install temporary wells, collect soil and groundwater samples, IDW handling, survey

(5) PROJECT ORGANIZATION AND COORDINATION - The following HGL personnel are designated to carry out the stated project job functions on site. (Note: One person may carry out more than one job function.)

	PROJECT MANAGER	Ex. 4 - CBI
	SITE SAFETY OFFICER	TBD (one HGL person onsite)
	ALTERNATE SITE SAFETY OFFICER	TBD
	PUBLIC INFORMATION OFFICER	
	SITE RECORDKEEPER	
	ON-SITE PERSONNEL WITH CPR/FA	TBD
	FIELD TEAM LEADER	TBD
	FIELD TEAM MEMBERS	NA
VISITORS:	FEDERAL AGENCY REPS (i.e., EPA, OSHA)	Sharon Fang, USEPA RPM
	STATE AGENCY REPS	Tim Cherry, PADEP
	LOCAL AGENCY REPS	
SUBCONTRACTORS:	SUBCONTRACTOR(S)' SITE	Geosyntec Consultants, INC.
	SAFETY OFFICERS	TBD once onsite

All personnel arriving or departing the site should log in and out with the Record Keeper.

(6) ONSITE CONTROL

NA has been designated to coordinate access control and security for HGL operations on site. A safe perimeter has been established during field operation. The perimeter will be constructed using caution tape and other physical barriers.

Geosyntec will be responsible for access control at the Site. HGL will honor the access control and will only enter areas necessary to conduct field Oversight activities.

No unauthorized person should be within this area.

The prevailing wind conditions are TBD. A wind direction indicator is used to determine daily wind direction. The Command Post is located upwind from the Exclusion Zone or at a sufficient distance to prevent exposure should a release occur.

Control boundaries have been established and Exclusion Zone(s) (the contaminated area) have been identified. (Attach site map)

These boundaries are identified by:

SECTION 3: PHYSICAL HAZARDS INFORMATION

(1) IDENTIFY POTENTIAL PHYSICAL HAZARDS TO WORKERS:

	Confined Space		Steep/uneven terrain		Surface water
X	Heavy equipment	X	Heat stress		Drum handling
X	Moving parts		Extreme cold	X	Noise
X	Heavy Lifting		Ionizing Radiation		Non-Ionizing Radiation
	Electrical	X	Traffic	X	Falls
X	Overhead Hazards	X	Biological Hazards		
X	Chemical Burns or Irritation	X	Lacerations and/or Contusions		

Describe other unsafe environments:

(2) SAFETY EQUIPMENT REQUIRED FOR HGL EMPLOYEES

	Combustible Gas Meter	X	Eye Wash		Snake Bite Kit
	Fall Protection		Emergency Shower		Floatation Device (USCG Type III)
	Confined Space Equipment		Barrier Tape		Emergency Air Horn
			Traffic Cones		Lights
	Ladder		Stretcher		Lights - emergency
X	First Aid Kit	X	A-B-C Fire Extinguisher	X	Communications - On Site
	EPI Pens	X	Tick Repellant		Communications - Off Site

SECTION 4: CHEMICAL HAZARDS INFORMATION

(1) IDENTIFIED CONTAMINANTS

Known or suspected hazardous/toxic materials (attach historical information, physical description, map of contamination and tabulated data, if available)

Maps of groundwater contamination are contained in the SAP.

MEDIA	SUBSTANCES INVOLVED	CHARACTERISTICS	ESTIMATED CONCENTRATIONS	PEL
GW & soil	TCE	VO		100 ppm
GW & soil	PCE	VO		5 ppm
GW & soil	1,2-DCE	VO		200 ppm
GW & soil	Vinyl chloride	VO		1 ppm

Media types: GW (ground water), SW (surface water), WW (wastewater), AIR (air), SL (soil), SD (sediment), WL (waste, liquid), WS (waste, solid), WD (waste, sludge), WG (waste, gas), OT (other).

Characteristics: CA (corrosive, acid), CC (corrosive, caustic), IG (ignitable), RA (radioactive), VO (volatile), TO (toxic), RE (reactive), BIO (infectious), UN (unknown), OT (other, describe)

(2) DESCRIBE POTENTIAL FOR CONTACT WITH EACH MEDIA TYPE FOR EACH OF THE HGL TASKS LISTED IN SECTION 2.4:

HGL TASK #	ROUTE OF EXPOSURE	POTENTIAL FOR CONTACT	METHOD OF CONTROL
1	Inhalation, skin	L	PPE
2	Inhalation, skin	L	PPE

The Site Safety Officer will brief the HGL field team on symptoms and signs of overexposure to chemical hazards.

SECTION 5: HAZARD COMMUNICATION PROGRAM

If chemicals are introduced to the site by HGL, Inc. (e.g., decontamination liquids, preservatives, etc.), bring a copy of the HGL, Inc. Hazard Communication Program and Material Safety Data Sheets (MSDSs) to the site. The Site Safety Officer will review this information with all field personnel prior to the start of the project. The Comprehensive List of Chemicals for this site includes:

Request SDSs from the PRP consultant for preservatives and

Any decontamination cleaners.

SECTION 6: ENVIRONMENTAL MONITORING

(1) The following environmental monitoring instruments shall be used on site at the specified intervals.

(2) Geosyntec will provide the PID. HGL should verify that it is calibrated and used properly.

EQUIPMENT		MONITORING PERIOD	PEL/REL/TLV	ACTION LEVEL
Combustible Gas Indicator	-	continuous/hourly/daily/other	25%	10%
O_2 Monitor	-	continuous/hourly/daily/other	19.5 - 25%	19.5
Colorimetric Tubes (type)	-	continuous/hourly/daily/other		
	-			
PID (Lamp ____10.6 eV)	-	continuous/hourly/daily/other	1 ppm	0.5 ppm* (vinyl chloride)
FID	-	continuous/hourly/daily/other	5 ppm	0.5ppm* (benzene)
Radiation Meter	-	continuous/hourly/daily/other		
Respirable Dust Monitor	-	continuous/hourly/daily/other		
Toxic Gas Indicator	-			
(Type)	-	continuous/hourly/daily/other		
Other	-	continuous/hourly/daily/other		
	-	continuous/hourly/daily/other		

* (benzene or vinyl chloride)

(2) Monitoring equipment is to be calibrated according to manufacturers' instructions. Record calibration data and air concentrations in the Health and Safety on-site log book.

(3) Recommended Action Levels for Upgrade or Downgrade of Respiratory Protection or Site Shutdown and Evacuation. These are average values. Consideration should be given to the potential for release of highly toxic compounds from the waste or from reaction by-products. Levels are for persistent (> 10 min) breathing zone measurements.

Uncharacterized Airborne Vapors or Gases		Characterized Gases, Vapors, Particulates*
Level D	Background*	Up to 50% of PEL, REL or TLV
Level C	Up to 5 ppm above background	Up to 25 times PEL, REL or TLV
Level B	5 ppm to 500 ppm above background	Up to 500 times PEL, REL or TLV
Level A	500 ppm to 1000 ppm above background	Up to 1000 times PEL, REL or TLV
*Off-site "clean" air measurement.		*Use mixture calculations (% allowed = $\sum_n$ (%/PEL$_n$) if more than one contaminant is present.

Oxygen Deficiency

Concentration	Action Taken
< 19.5% O_2	Leave Area. Reenter only with supplied-air respirators.
19.5 % to 25% O_2	Work may continue. Investigate changes from 21%.
> 25% O_2	Work must stop. Ventilate area before returning.

Flammability

Concentration	Action Taken
< 10% of LEL	Work may continue. Consider toxicity potential.
10% to 25% LEL	Work may continue. Increase monitoring frequency.
> 25% LEL	Work must stop. Ventilate area before returning.

Radiation

Intensity	Action Taken
< .5 mR/hr	Work may continue.
< 1 mR/hr	Work may continue. Continue to monitor. Notify Corporate H&S
5 mR/hr	Radiation work zone. Work must stop.

SECTION 7: HEALTH AND SAFETY TRAINING AND MEDICAL MONITORING PROGRAM

The project staff is included in the HGL Health and Safety training and medical monitoring programs.

		HAZWOPER TRAINING				
Name	Medical (Date)	Initial (Hrs/Date:	Refresher (Date)	MGR/SUPV (Date)	CPR/FA/BBP Dates	Fit Test (Make/Size/Type/Date)
Ex. 4 - CBI			2-21-13		8-26-2009/ 8-30-2010	
Ex. 4 - CBI	3-26-13	12-8-2006	4-16-13	Ex. 4 - CBI	4-19-12	

SECTION 8: PERSONAL MONITORING

The following personal monitoring will be in effect on site:

Personal exposure sampling:

PID monitoring will be provided by the PRP consultant; HGL should verify the PID is used correctly.

Medical monitoring: The expected air temperature will be 90ºF. If it is determined that heat stress monitoring is required (mandatory for heavy exertion in PPE at temperatures over 70°F) the following procedures shall be followed (describe procedures in effect, i.e., monitoring body temperature, body weight, pulse rate): See Appendix for heat and cold stress procedures

A copy of personal monitoring results is to be sent to Corporate Health and Safety for inclusion in the Employee's Confidential Exposure Record File.

SECTION 9: CONFINED SPACE ENTRY

(1) WILL CONFINED SPACE ENTRY TAKE PLACE? Yes ____ No X

If yes, attach Confined Space Entry Program and complete the Pre-Entry Inspection Checklist and Confined Space Entry Permit prior to entering each confined space, each work shift. The Confined Space Permit must be posted outside the confined space.

Permits will be saved and logged with project documentation.

SECTION 10: COMMUNICATIONS PROCEDURES

The following standard hand signals will be used in case of failure of radio communications:

Hand gripping throat	-	Out of air, can't breathe
Grip partner's wrist or both hands around wrist	-	Leave area immediately
Hands on top of head	-	Need assistance
Thumbs up	-	OK, I am all right, I understand
Thumbs down	-	No, negative

~~If applicable, telephone communication to the Command Post should be established as soon as practicable. The stationary and/or mobile phone number(s) are _____ and _____.~~

SECTION 11: DECONTAMINATION PROCEDURES

Personnel and equipment leaving the Exclusion Zone shall be thoroughly decontaminated. The Site Safety Officer is responsible for monitoring adherence with this decontamination plan. The standard level _____ decontamination protocol shall be used with the following decontamination stations*:

(1) PPE should be disposed of.

(2) Boots should be cleaned of dirt and debris

(3) Plastic should be used on seats and floors in vehicles to contain soil and debris and disposed of prior to leaving the Site.

(4) Wash hands after removing PPE and cleaning boots

(5)

(6)

(7)

(8)

(9)

(10)

Other

*See the HGL Health and Safety Procedures Manual, Procedure 02, Personal Protective Equipment, for sample decontamination station descriptions.

The following decontamination equipment is required:

Hand wipes, decon brushes. All other decon supplies will be supplied by the PRPs.

SECTION 12: EMERGENCY PROCEDURES

The following standard emergency procedures will be used by onsite personnel. The Site Safety Officer (SSO) shall be notified of any onsite emergencies and be responsible for ensuring that the appropriate procedures are followed.

Personnel Injury in the Exclusion Zone: Upon notification of an injury in the Exclusion Zone, the designated emergency signal 3 bursts of an air horn shall be sounded. All site personnel shall assemble at the decontamination line. An outside rescue team summoned by the field team leader or SSO will enter the Exclusion Zone (if required) to remove the injured person to the hotline. The SSO and Field Team Leader should evaluate the nature of the injury, and the affected person should be decontaminated to the extent possible prior to movement to the Support Zone. The onsite CPR/FA personnel shall initiate the appropriate first aid, and contact should be made for an ambulance and with the designated medical facility (if required). No persons shall reenter the Exclusion Zone until the cause of the injury or symptoms are determined.

Personal Protective Equipment Failure: If any site worker experiences a failure or alteration of protective equipment that affects the protection factor that person and his/her buddy shall immediately leave the Exclusion Zone. Reentry shall not be permitted until the equipment has been repaired or replaced.

Fire/Explosion: Upon notification of a fire or explosion on site, the designated emergency signal 3 bursts of an air horn shall be sounded and all site personnel assembled at the decontamination line. The fire department shall be alerted and all personnel moved to a safe distance from the involved area.

Other Equipment Failure: If any other equipment on site fails to operate properly, the Field Team Leader and Site Safety Officer shall be notified and then determine the effect of this failure on continuing operations on site. If the failure affects the safety of personnel or prevents completion of the Work Plan tasks, all personnel shall leave the Exclusion Zone until the situation is evaluated and appropriate actions taken.

The following emergency escape routes are designated for use in those situations where egress from the Exclusion Zone can not occur through the decontamination line (attach map if available):

TBD determined onsite after determining wind direction

In all situations, when an onsite emergency results in evacuation of the Exclusion Zone, personnel shall not reenter until:

1. The conditions resulting in the emergency have been corrected.
2. The hazards have been reassessed by the SSO.
3. The Site Safety Plan has been reviewed by the SSO and Corporate Health and Safety Director.
4. Site personnel have been briefed on any changes in the Site Safety Plan by the SSO.

SECTION 13. EMERGENCY INFORMATION

TO BE POSTED IN SITE-TRAILER/OFFICE AND IN FIELD VEHICLES

(1) LOCAL RESOURCES

Ambulance (name):	Chalfont EMS	Phone:	911 / 215-822-1308
Hospital (name):	Advanced Urgent Care	Phone:	267-263-2298
Police (local or state):	Chalfont Police Department	Phone:	(215) 348-3524
Fire Dept. (name):	Colmar Fire Department	Phone:	911 Emergency / 215-822-1444 Non Emergency
HAZ MAT Responder:		Phone:	
Nearest phone:	Cell phone		
On-Site CPR/FA(s):	TBD		

The hospital is 7 minutes from the site and the ambulance response time is 10 minutes. _____ of was contacted on ___/___/___ and briefed on the situation, the potential hazards, and the substances involved. When IDLH conditions exist, arrangements should be made for onsite standby of emergency services.

(2) DIRECTIONS TO NEAREST HOSPITAL - ATTACH MAP:

(3) CORPORATE RESOURCES

[redacted] CIH, CSP — [redacted]

Corporate Health & Safety Director — [redacted]

[redacted] — [redacted]

(Office Health & Safety Coordinator)

HGL Corporate Occupational Physician

[redacted] — [redacted]

WorkCare 24/7 Emergency hotline

HGL Emergency Contact Number: 800-341-3647

(4) WHOM TO NOTIFY IN CASE OF ACCIDENT:

Project Manager: [redacted]; Corporate H&S Director: [redacted]

SECTION 14: PROTECTIVE EQUIPMENT LIST

TASK*	RESPIRATORS & CARTRIDGE*	USE	CLOTHING	GLOVES	BOOTS	OTHER
1	APR/O	UP	NA	T	S	H,N
2	APR/O	UP	NA	T	S	

*Same as in Section 4(2).

RESPIRATORS	APR CARTRIDGES	USE	CLOTHING	GLOVES	BOOTS	OTHER
B = SCBA	O = Organic vapor	Cont = Continuous	T = Tyvek	B = Butyl	F = Firemans	F = Face Shield
APR = APR	G = Organic vapor/acid gas	UP = Upgrade	P = PE Tyvek	L - Latex	L = Latex	G = Goggles
E = Escape	P = Particulate		C = Coveralls	T = Nitrile	S = Safety	H = Hardhat
AL = Airline	C = Combination organic			V = Viton		N = Hearing Protection
				PA = Polyvinyl Alcohol		

SECTION 15: SAFE WORK PRACTICES

THE FOLLOWING PRACTICES MUST BE FOLLOWED BY PERSONNEL ON SITE

1. Smoking, eating, chewing gum or tobacco, or drinking are forbidden except in clean or designated areas.
2. Ignition of flammable liquids within or through improvised heating devices (e.g., barrels) is forbidden.
3. Contact with samples, excavated materials, or other contaminated materials must be minimized.
4. Use of contact lenses is prohibited at all times.
5. Do not kneel on the ground when collecting samples.
6. If drilling equipment is involved, know where the 'kill switch' is.
7. All electrical equipment used in outside locations, wet areas or near water must be plugged into ground fault circuit interrupter (GFCI) protected outlets.
8. A "Buddy System" in which another worker is close enough to render immediate aid will be in effect.
9. Good housekeeping practices are to be maintained.
10. Where the eyes or body may be exposed to corrosive materials, suitable facilities for quick drenching or flushing shall be available for immediate use.
11. In the event of treacherous weather-related working conditions (i.e., thunderstorm, limited visibility, extreme cold or heat) field tasks will be suspended until conditions improve or appropriate protection from the elements is provided.

Site Specific Safe Work Practices:_____

_____

_____

SECTION 16: EMPLOYEE ACKNOWLEDGEMENTS

PLAN REVIEWED BY: DATE

Corporate Health & Safety: _____ _____

Site Safety Officer: _____ _____

Project Manager: _____ _____

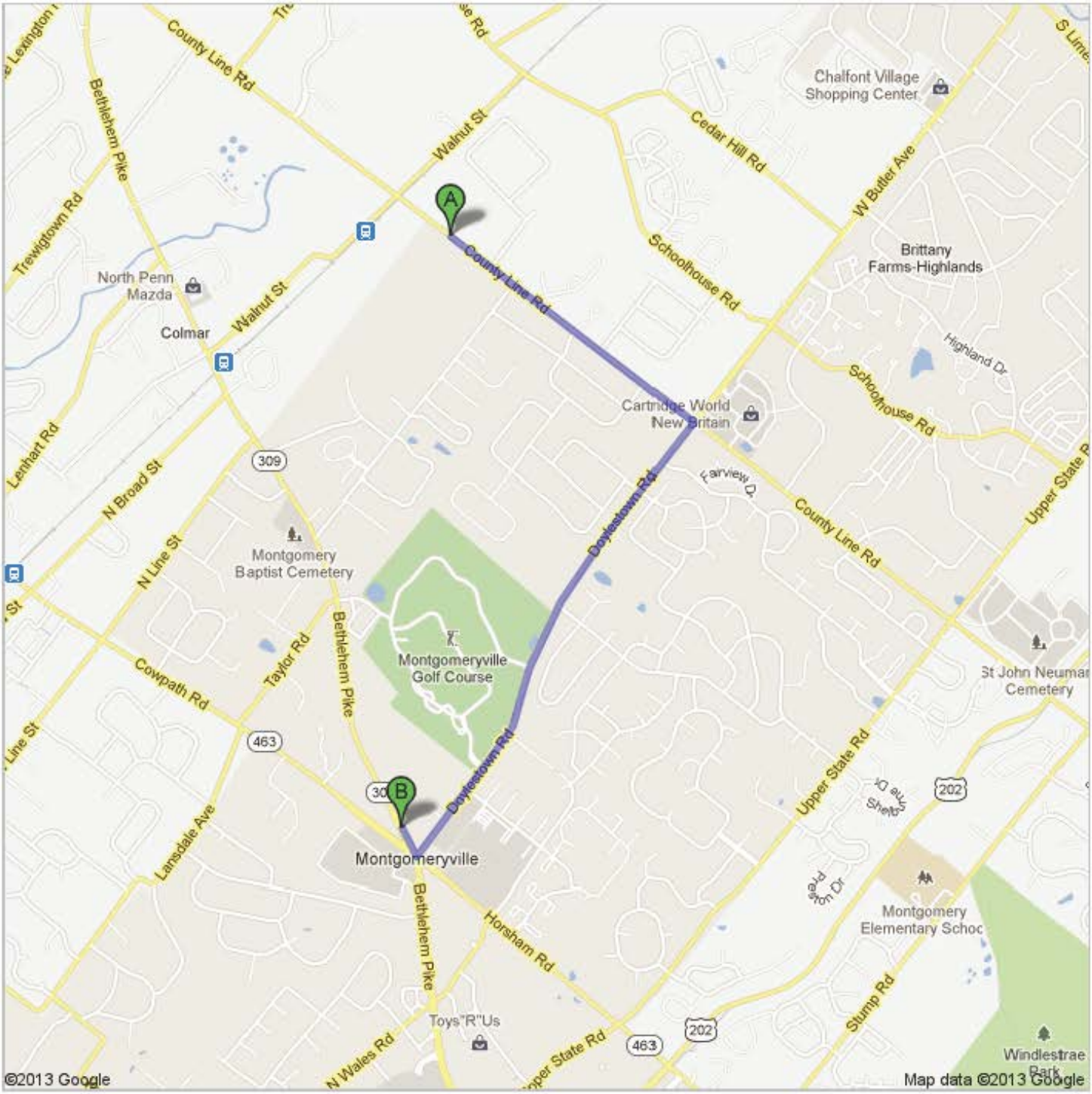
Project Leader: _____ _____

I acknowledge that I have read the information on this Site Safety Plan Short Form and the attached Material Safety Data Sheets (MSDSs). I understand the site hazards as described and agreed to comply with the contents of this Plan.

EMPLOYEE (print name)	SIGNATURE	DATE

Google

Directions to Advanced Urgent Care
721 Bethlehem Pike, Montgomeryville, PA 18936
2.5 mi – about 5 mins
Go Southeast on County Line Road.
Turn Right Doylestown Road, go 1.5 miles.
Turn Left Right on Bethlehem Pike, Advanced Care is on the right.



92 County Line Rd, Colmar, PA 18915

1.	Head southeast on County Line Rd toward Richardson Rd About 1 min	go 0.9 mi total 0.9 mi
2.	Turn right onto Doylestown Rd About 3 mins	go 1.5 mi total 2.4 mi
3.	Turn right onto Bethlehem Pike Destination will be on the right	go 495 ft total 2.5 mi

Advanced Urgent Care
721 Bethlehem Pike, Montgomeryville, PA 18936

These directions are for planning purposes only. You may find that construction projects, traffic, weather, or other events may cause conditions to differ from the map results, and you should plan your route accordingly. You must obey all signs or notices regarding your route.

Directions weren't right? Please find your route on maps.google.com and click "Report a problem" at the bottom left.